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(21) International Application Number: PCT/FI99/00213 (22) International Filing Date: 18 March 1999 (18.03.99) (30) Priority Data: 980718 30 March 1998 (30.03.98) FI (71) Applicant (for all designated States except US): SONERA OY [FI/FI]; Tcollisuuskatu 15, FIN-00510 Sonera (FI). (72) Inventor; and (75) Inventor/Applicant (for US only): TAKALA, Anu [FI/FI]; Siilitie 2 B 13, FIN-00800 Helsinki (FI). (74) Agent: PAPULA REIN LAHTELA OY; Fredrikinkatu 61 A, P.O. Box 981, FIN-00101 Helsinki (FI).		(81) Designated States: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).  <b>Published</b> <i>In English translation (filed in Finnish). Without international search report and to be republished upon receipt of that report.</i>	
(54) Title: SYSTEM AND PROCEDURE FOR IMPLEMENTING AN ANSWERING SERVICE			
(57) Abstract  System and procedure for implementing an answering service in a telecommunication network (1) comprising a short-message service centre (SMSC) for receiving, storing and sending a short message, an electronic mail service base (6) for receiving, storing and sending an electronic mail message, a mobile services switching centre (MSC) and data terminal equipment (DTE). According to the invention, an answering server (2) automatically answers calls and/or electronic mail addressed by an A-subscriber to a B-subscriber, in accordance with fields stored in the B-subscriber's calendar database (3) if the B-subscriber cannot be reached.			

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SYSTEM AND PROCEDURE FOR IMPLEMENTING AND ANSWERING  
SERVICE

The present invention relates to a system as defined in the preamble of claim 1 and to a procedure  
5 as defined in the preamble of claim 9 for implementing a short message or electronic mail response on the basis of a subscriber's calendar information.

At present, when a subscriber cannot be reached by telephone or electronic mail, calls or mail  
10 to the subscriber are received by a secretary, who may be hired for the job. In the following, the caller or the sender of electronic mail is called A-subscriber and the addressee of the call or electronic mail is called B-subscriber.

15 When a A-subscriber is trying to reach a B-subscriber, a secretary tells where the B-subscriber is and asks the A-subscriber to call again and receives any messages for his/her employer. In addition, in the telephone network it is possible to use a telephone answer-back device for leaving and receiving a  
20 short message. Furthermore, chargeable secretary services are available.

It is also possible in the telephone network to send electronic mail messages based on the TCP/IP  
25 protocol. In addition, in certain mobile communication systems the subscriber can send and receive short messages in text form.

Employing human labour to take care of receiving calls and electronic mail is expensive. A secretary is also limited by his/her personal resources and liable to human errors. Moreover, a secretary is  
30 only available during working hours. Furthermore, transmission of speech in a telecommunication network requires an unreasonable deal of network capacity. The  
35 telecommunication network is also burdened by useless communication attempts.

A further problem in the use of secretarial services and telephone answering devices is that the callers cannot be sorted out but each caller is given the same predetermined information. It is likewise impossible to define an automatic, sender-specific response to electronic mail messages.

In earlier methods, communication with foreign parties is also restricted by language problems. The caller or sender does not necessarily speak the same language with the secretary/answering device.

The object of the present invention is to eliminate the drawbacks described above or at least to significantly reduce them.

A specific object of the present invention is to disclose a new type of procedure and system for a short message or electronic mail answering service formed on the basis of calendar information relating to the B-subscriber. A further object of the invention is to provide a possibility to generate an answer from information that the B-subscriber has specified for each A-subscriber.

As for the features characteristic of the invention, reference is made to the claims.

The system of the present invention for implementing an answering service in a telecommunication network comprises a short-message service centre (SMSC) for receiving, storing and sending a short message, an electronic mail service base for receiving, storing and sending an electronic mail message, a mobile services switching centre (MSC) and data terminal equipment (DTE). According to the invention, an answering server is provided, comprising means, which can be implemented in any way known to the skilled person, preferably via software, for generating and transmitting an automatic short message or electronic mail answer from the B-subscriber's calendar database

if the A-subscriber cannot reach the B-subscriber by telephone or via electronic mail.

In an embodiment of the system, the calendar database contains calendar information relating to the B-subscriber, stored in different fields, sorted according to content. Thus, different fields could contain items of information e.g. as follows: B-subscriber's name, point of time, B-subscriber's whereabouts, person acting as substitute, and free space for other messages. If necessary, it is also possible to store in the calendar database a field in which a reminder message to be sent to the B-subscriber is defined concerning an event specified as being of essential importance.

In an embodiment of the system, the calendar database comprises means for updating the information from an electronic calendar used by the B-subscriber. These means can be implemented in any manner known to the skilled person, such as using electronics or preferably software.

In an embodiment of the system, the answering server comprises means for identifying the A-subscriber on the basis of the telephone number or electronic mail address. Further, the answering server comprises means for generating a response from calendar database fields set by the B-subscriber for the A-subscriber identifier in question. Both of the above-mentioned means can be implemented in any manner known to the skilled person, such as using electronics or preferably software. Furthermore, a connection is provided from the answering server to a user database for identification of the B-subscriber and obtaining the correct information for a response. Further, the answering server comprises means for connecting the call to a telephone answer-back service. These means can be implemented in any manner known to the skilled person, such as using electronics or preferably software. The

call is transferred to a telephone answer-back device only if the B-subscriber has activated this service for the A-subscriber identifier in question.

5 In an embodiment of the system, the system comprises means for maintaining and changing the information in the B-subscriber's electronic calendar from the subscriber's own terminal equipment, from the Internet or from a separate information system. These means can be implemented in many ways known to the skilled person, preferably via software.

10 In the procedure of the present invention for implementing an answering service in a telecommunication network comprising a short-message service centre (SMSC) for receiving, storing and sending a short message, an electronic mail service base for receiving, storing and sending an electronic mail message, a mobile services switching centre (MSC) and data terminal equipment (DTE), if the B-subscriber cannot be reached, an answering server automatically answers  
15 calls and/or electronic mail messages addressed to the B-subscriber by the A-subscriber, in accordance with fields stored for the B-subscriber in the calendar database.

20 In an embodiment of the procedure, items of calendar information regarding the B-subscriber are stored in different fields in the calendar database, sorted according to the content of the information.

In an embodiment of the procedure, the calendar database is updated from an electronic calendar  
25 used by the B-subscriber.

In an embodiment of the procedure, the answering server identifies the A-subscriber by the telephone number and/or electronic mail address. Furthermore, the answering server generates an answer to  
30 the A-subscriber from calendar database fields set by the B-subscriber for the A-subscriber identifier in question. Further, the answering server identifies the

B-subscriber from a user database in order to find the right calendar database.

In an embodiment of the procedure, the answering server activates a telephone answering service if someone attempts to reach the B-subscriber by telephone and this function has been set to an active state for the A-subscriber identifier in question.

In an embodiment of the procedure, the B-subscriber may use his/her electronic calendar from his/her own terminal equipment, from the Internet or from a separate information system.

As compared with prior art, the present invention has the advantage that it provides a cheap, reliable and fast method for implementing an accessibility service for all parties. For the B-subscriber, the method is cheaper than a secretary. Moreover, the service is active day and night. Furthermore, the B-subscriber can combine all his/her calendar services in one service. Information stored in the calendar database is preserved even if the electronic calendar used by the B-subscriber should be destroyed or lost. Further, the calendar database can be regarded as a backup for the electronic calendar. Thus, for instance, if the electronic calendar should be destroyed, the calendar data can be retrieved from the calendar database and fed into a functional electronic calendar. In addition, the invention makes it possible to combine an interpreting service with the answering service, thus allowing calls or correspondence received from abroad to be answered in the A-subscriber's own language.

The invention allows a considerable saving in network capacity to be achieved because messages are transmitted in the form of compact data packets instead of circuit-switched speech requiring plenty of capacity. Useless communication attempts by the A-

subscriber are also avoided. This saves both network capacity and the A-subscriber's time.

A further advantage as compared with prior art is ease of use.

5 In the following, the invention will be described in detail by the aid of a few examples of its embodiments with reference to the attached drawing, which presents an embodiment of the system of the invention.

10 The system illustrated in Fig. 1 comprises a telecommunication network 1 comprising a mobile services switching centre MSC, a short-message service centre SMSC for the reception, delivery and storage of short messages, and an electronic mail service base 6  
15 for the reception, delivery and storage of electronic mail messages. Furthermore, the system comprises an answering server 2, which comprises means 8 and 11 for generating and transmitting from the B-subscriber's calendar database 3 an automatic response to a short  
20 message or electronic mail message, said response being individualised for the A-subscriber identifier. The calendar database 3 comprises means 9 for the updating of information from the B-subscriber's electronic calendar 4, which comprises means 13 for main-  
25 taining information relating to the B-subscriber from his/her data terminal equipment DTE, from the Internet or from some other, separate information system. In this example, means 9 and 13 are preferably implemented using software. Moreover, the answering server  
30 2 comprises means 10 for identifying the A-subscriber on the basis of the telephone number and/or electronic mail address and means 12 for connecting the call to a telephone answering server 7. In the case of the present example, means 8, 10, 11 and 12 are preferably im-  
35 plemented with software. To identify the B-subscriber, a user database 5 is used. The system further comprises data terminal equipment DTE, which may consist



of a telephone and/or a computer terminal connected to a TCP/IP network (Transmission Control Protocol/Internet Protocol, TCP/IP). Moreover, the system comprises an answering server 7 for implementing a telephone answer-back service.

In an embodiment as illustrated in Fig. 1, the B-subscriber maintains his/her calendar database 3 e.g. by filling his/her electronic calendar 4 with desired information from his/her data terminal equipment DTE, which preferably consists of a mobile station or a computer. The electronic calendar 4 may be implemented e.g. in the Internet, in a mobile station or in a separate database.

In an embodiment as illustrated in Fig. 1, the A-subscriber's data terminal equipment consists of a mobile station. The A-subscriber calls the B-subscriber's number via his/her mobile station and the call is transferred to the answering server 2 in a manner defined by the B-subscriber.

The B-subscriber may store a setting in the answering server 2 to indicate whether calls from certain numbers are to be connected to another number or to the subscriber's own terminal equipment or whether each call is to be answered with a short message. The answering server 2 identifies the B-subscriber from the user database 5 and then uses the information stored in the B-subscriber's calendar database 3 to generate a short message response to the A-subscriber. The information in the calendar database 3 has been sorted into different fields, each containing different information about the B-subscriber regarding his/her schedule, appointments, substitutes, etc. The B-subscriber can enter definitions in the answering server 2 specifying which A-subscriber identifiers are to answered with information from which fields in the calendar database 3. If necessary, it is also possible to define in the calendar database 3 a field in which

a reminder message about an event considered essential can be defined, to be sent to the B-subscriber.

In the case of the example, the A-subscriber identifier is the telephone number 1234 of the A-subscriber's mobile station. For this identifier, the B-subscriber has defined e.g. a short message like this: "I am in London. In urgent business matters, contact me at number 2345", to be sent to the A-subscriber. For an A-subscriber calling from another number, the message generated and sent by the answering server 2 could be e.g. "I am at a conference. Contact me again tomorrow.". The B-subscriber can also simultaneously use a telephone answering device, in which case an A-subscriber for whose identifier this function has been activated is first connected to an answer-back server 7, whereupon he/she receives the information from the answering server 2 in accordance with the above example.

In the case of the example, for A-subscriber identifiers for which no special message has been specified, a message can be generated e.g. only from the first field in the calendar database 3.

In the case of the example, the A-subscriber could just as well have used a computer as data terminal equipment DTE, in which case he/she would have sent an electronic mail message over the Internet and received a response like those in the above example by electronic mail. In such cases, the A and B subscribers are identified on the basis of the electronic mail address.

In the case of the example, there is a possibility that the electronic calendar 4 used by the B-subscriber is e.g. destroyed. In this case, the B-subscriber can copy his/her data from the calendar database 3 back to a new or restored electronic calendar 4.

The invention is not restricted to the examples of its embodiments described above, but many variations are possible within the scope of the inventive idea defined in the claims.

## CLAIMS

1. System for implementing an answering service in a telecommunication network (1) comprising a short-message service centre (SMSC) for receiving, storing and sending a short message, an electronic mail service base (6) for receiving, storing and sending an electronic mail message, a mobile services switching centre (MSC) and data terminal equipment (DTE), characterised in that the system comprises an answering server (2) which comprises means (8) for generating and transmitting an automatic short message or electronic mail response from the B-subscriber's calendar database (3) if the A-subscriber cannot reach the B-subscriber via a phone call or an electronic mail message.

2. System as defined in claim 1 characterised in that the calendar database (3) contains calendar information relating to the B-subscriber, stored in different fields and sorted by content.

3. System as defined in claim 1 or 2, characterised in that the calendar database (3) comprises means (9) for updating the information from an electronic calendar (4) used by the B-subscriber.

4. System as defined in any one of claims 1 - 3, characterised in that the answering server (2) comprises means (10) for identifying the A-subscriber on the basis of the telephone number and/or electronic mail address.

5. System as defined in any one of claims 1 - 4, characterised in that the answering server (2) comprises means (11) for generating a response from those fields in the calendar database (3) which the B-subscriber has set for the A-subscriber identifier in question.

6. System as defined in any one of claims 1 - 5, characterised in that a connection is pro-

vided from the answering server (2) to a user database (5) for identification of the B-subscriber and to allow correct response information to be found.

7. System as defined in any one of claims 1 - 5 6, characterised in that the answering server (2) comprises means (12) for connecting the call to a telephone answer-back service if the B-subscriber has activated this service for the A-subscriber identifier in question.

10 8. System as defined in any one of claims 1 - 7, characterised in that the system comprises means (13) for maintaining and changing the information in the B-subscriber's electronic calendar (4) from the subscriber's own data terminal equipment 15 (DTE), via the Internet or via a separate information system.

9. Procedure for implementing an answering service in a telecommunication network (1) comprising a short-message service centre (SMSC) for receiving, 20 storing and sending a short message, an electronic mail service base (6) for receiving, storing and sending an electronic mail message, a mobile services switching centre (MSC) and data terminal equipment (DTE), characterised in that an answering 25 server (2) automatically answers calls and/or electronic mail addressed by an A-subscriber to a B-subscriber, in accordance with fields stored in the B-subscriber's calendar database, (3) if the B-subscriber cannot be reached.

30 10. Procedure as defined in claim 9, characterised in that calendar information relating to the B-subscriber is stored in different fields in the calendar database (3), sorted by content.

11. Procedure as defined in claim 9 or 10, 35 characterised in that the calendar database (3) is updated from the B-subscriber's electronic calendar (4).

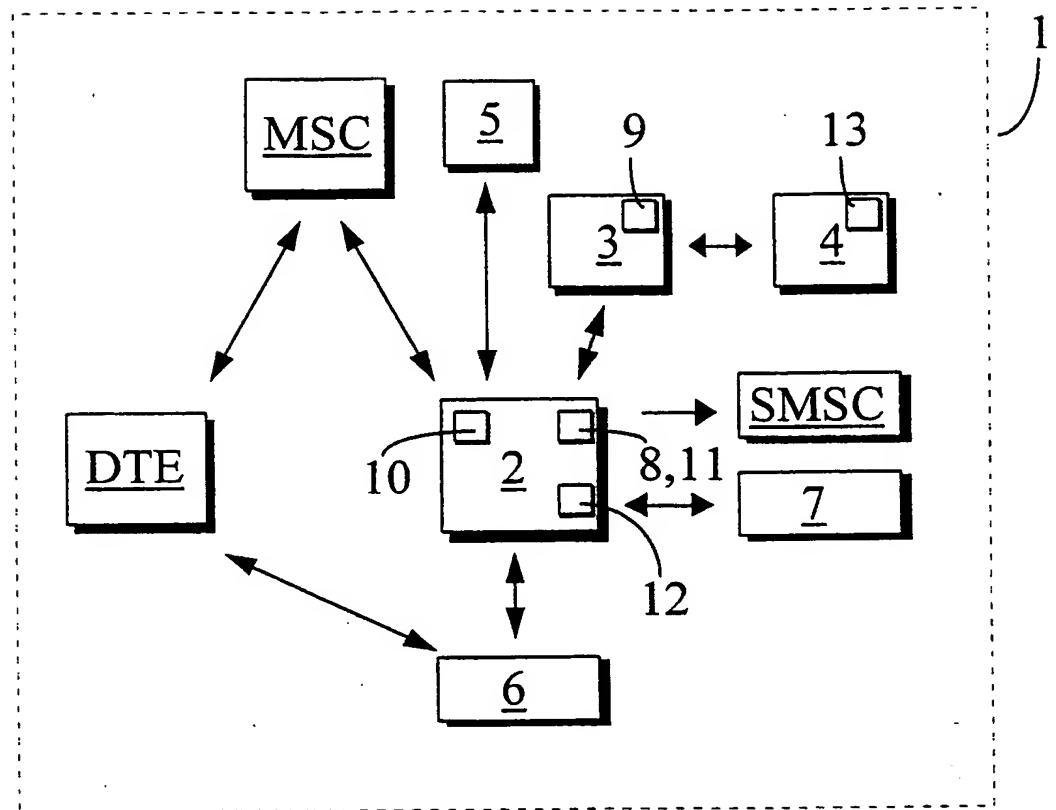
12. Procedure as defined in any one of claims 9 - 11, characterised in that the answering server (2) identifies the A-subscriber by the telephone number and/or electronic mail address.

5 13. Procedure as defined in any one of claims 9 - 12, characterised in that the answering server (2) generates a response for the A-subscriber from fields in the calendar database (3) that the B-subscriber has set for the A-subscriber identifier in  
10 question.

14. Procedure as defined in any one of claims 9 - 13, characterised in that the answering server (2) identifies the B-subscriber from a user database (5) in order to find the correct calendar data-  
15 base (3).

15. Procedure as defined in any one of claims 9 - 14, characterised in that the answering server (2) activates a telephone answer-back service if someone attempts to reach the B-subscriber by tele-  
20 phone and this function has been set to an active state for the A-subscriber identifier in question.

16. Procedure as defined in any one of claims 9 - 15, characterised in that the B-subscriber can use his/her electronic calendar (4)  
25 from his/her own terminal equipment (DTE), from the Internet or from a separate information system.









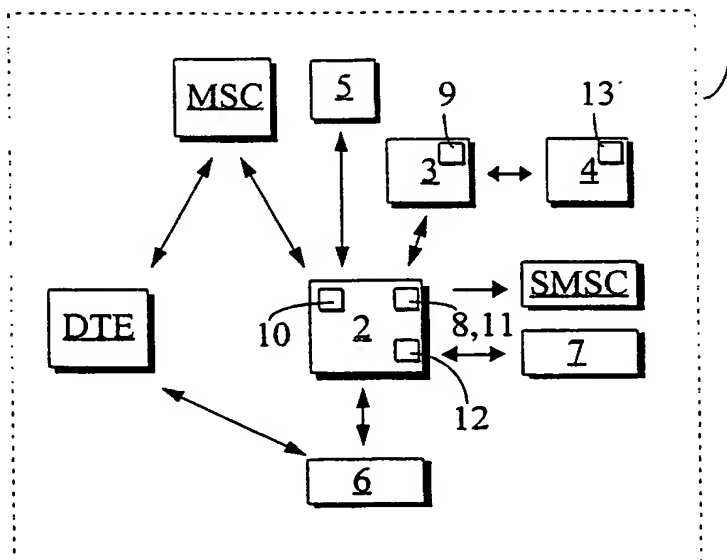
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(54) Title: SYSTEM AND PROCEDURE FOR IMPLEMENTING AN ANSWERING SERVICE



## (57) Abstract

System and procedure for implementing an answering service in a telecommunication network (1) comprising a short-message service centre (SMSC) for receiving, storing and sending a short message, an electronic mail service base (6) for receiving, storing and sending an electronic mail message, a mobile services switching centre (MSC) and data terminal equipment (DTE). According to the invention, an answering server (2) automatically answers calls and/or electronic mail addressed by an A-subscriber to a B-subscriber, in accordance with fields stored in the B-subscriber's calendar database (3) if the B-subscriber cannot be reached.

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## INTERNATIONAL SEARCH REPORT

International application No.

PCT/FI 99/00213

## A. CLASSIFICATION OF SUBJECT MATTER

IPC6: H04Q 7/22, H04M 3/42

According to International Patent Classification (IPC) or to both national classification and IPC

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IPC6: H04M, H04Q, G06F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

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## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	WO 9747120 A2 (AT&T CORP.), 11 December 1997 (11.12.97), page 7, line 26 - page 18, line 20 --	1-16
Y	EP 0783219 A2 (NOKIA MOBILE PHONES LTD.), 9 July 1997 (09.07.97), column 1, line 26 - column 10, line 32 --	1-16
Y	US 5276731 A (YGAL ARBEL ET AL), 4 January 1994 (04.01.94), column 4, line 11 - column 13, line 27 --	1-16

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## C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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Information on patent family members

28/09/99

International application No.

PCT/FI 99/00213

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